### **Process Sheet**

Customer

: CU-DAR001 Dart Helicopters Services

Job Number

Estimate Number

: 33694 10278

P.O. Number This Issue

: HIA

: 7/20/2007

Prsht Rev.

Written By

Comment

First Issue Previous Run

MACHINED PARTS

: Est Rev.Pick:A 04.02.18

New issue KJ/DS

**Drawing Name** 

: BRACKET ASSEMBLY

Part Number Drawing Number

: D3121141 . D3121 REV D

Project Number

**Drawing Revision** 

Material **Due Date**  : 8/15/2007

Each

**Additional Product** 

Checked & Approved By

Job Number:



Seq. #:

Description:

Comment: Qty...

0.5775 f(s)/Unit Total:

Material: 17-4 SS Bar per AMS 5604/5643 (M17-4-B1.000x02.000)

Identify for D3121-111 Batch: \_4103089

BAND SAW



Comment: BAND SAW

Cut blanks: (1.000" x 2.000") 6.600" long

HAAS CNC VERTICAL MACHINING #1



3.0

Comment: HAAS CNC VERTICAL MACHINING #1

1-Machine D3121-111 as per Folio FA361 and Dwg D3121Identify as D3121-111

2-Deburr

3-Scribe batch number

Page 1

INSPECT PARTS AS THEY COME OFF MACHIN



Comment: INSPECT PARTS AS THEY COME OFF MACHINE



Form: rorocess

## Dart Aerospace Ltd

| W/O: |      | WORK ORDER CHANGES     |       |                                     |                          |  |  |  |  |  |  |
|------|------|------------------------|-------|-------------------------------------|--------------------------|--|--|--|--|--|--|
| DATE | STEP | PROCEDURE CHANGE By Da | ate Q | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |  |  |  |  |  |  |
|      |      |                        |       |                                     |                          |  |  |  |  |  |  |
|      |      |                        |       |                                     |                          |  |  |  |  |  |  |
|      |      |                        |       | -                                   |                          |  |  |  |  |  |  |

| Part No: | _ PAR #: | Fault Category: | <del></del> | NCR: Yes No | DQA:   | Date: | Alula |
|----------|----------|-----------------|-------------|-------------|--------|-------|-------|
|          |          |                 |             | QA: N/C C   | losed: | Date: |       |

| NCR:      |   | WORK ORDER NON-CONFORMANCE (NCR)  |  |                   |                      |                           |           |              |  |  |
|-----------|---|---|--|-------------------|----------------------|---------------------------|-----------|--------------|--|--|
| ÷         | _ | Description of NC   | Corrective Action Section B                    |                   |                      |                           | Approval  | Approval     |  |  |
| DATE STEP |   | Section A   | Initial Action Description Chief Eng Chief Eng |                   | Sign & Date          | Verification<br>Section C | Chief Eng | QC Inspector |  |  |
| , α       | 3 | -1 part is scrap, 580 chamter around slots are 625                                      | { /  | - scrapt replace  | 7.1                  |                           |           |              |  |  |
| 5thol29   |   | -there was a Flat on chamfer<br>tool, operator torget to raise<br>tool Ric Humansa eman | Posture  | ·                 | <sub>01/10</sub> /२१ | Auly                      | Postur    | cx<br>of(w/t |  |  |
| Aliala    | 3 | - 1 part tap broke in hole while tapping  |  | Seron and Replace | ゴル                   | G 7                       |           | 810          |  |  |
| 2/1010    |   | - cannot remove tap   | Losiwe   |                   | 04/10/29             | Adza                      | Fosiver   | ACIZ         |  |  |
|           |   |   |  |                   |                      |                           |           |              |  |  |
|           |   |   |  |                   |                      |                           |           |              |  |  |
|           |   |   |  |                   |                      |                           |           | .*           |  |  |

NOTE: Date & initial all entries

Date: Friday, 7/20/2007 10:19:54 AM Kim Johnston ⊌ser: **Process Sheet** Drawing Name: BRACKET ASSEMBLY Customer: CU-DAR001 Dart Helicopters Services Part Number: D3121141 Job Number: 33694 Job Number: Description: Seq. #: Machine Or Operation: SECOND CHECK 5.0 QC8 Comment: SECOND CHECK D312121 10.0000 Each(s) Comment: Qty.: 1.0000 Each(s)/Unit Total: Pick: Qty Part Number Description Batch Bolt 3 33503 07/10/31/28 1 D3121-21 7.0 D3121241 Bearing Assembly 10.0000 Each(s) 1.0000 Each(s)/Unit Total : Comment: Qty.: Pick: Description Batch Qty Part Number 07/16/31/8 1 D3121-241 Bearing Ass SMALL & MEDIUM FAB RESOURCE 1 SMALLIFAB 1 Comment: SMALL & MEDIUM FAB RESOURCE 1 TE 07-10-31. Assemble D3121-141 as per Dwg D3121. QC5 Comment: INSPECT WORK TO CURRENT STEP 57 PACKAGING ' PACKAGING RESOURCE #1 10.0 Comment: PACKAGING RESOURCE #1 Identify and Stock Location: 2-3 11.0 QC21 Comment: FINAL INSPECTION/W/O RELEASE U 87-11-02 Job Completion

Form: mrocess

Page 2

## **Dart Aerospace Ltd**

| W/O:    |        | WORK ORDER CHANGES     |          |       |     |                                     |                          |  |  |  |
|---------|--------|------------------------|----------|-------|-----|-------------------------------------|--------------------------|--|--|--|
| DATE    | STEP   | PROCEDURE CHANGE       | Ву       | Date  | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |  |  |  |
|         | ,      |                        |          |       |     |                                     |                          |  |  |  |
|         |        |                        |          |       |     |                                     |                          |  |  |  |
|         |        |                        |          |       |     |                                     |                          |  |  |  |
| Part No | ):<br> | PAR #: Fault Category: | NCR: Yes | No DQ | A:  | Date:                               |                          |  |  |  |

QA: N/C Closed: \_\_\_\_ Date: \_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                      |                              |                |                             |                       |                          |  |  |  |
|------|------|----------------------------------|----------------------|------------------------------|----------------|-----------------------------|-----------------------|--------------------------|--|--|--|
|      |      | Description of NC                |                      | Corrective Action Section B  |                | - Verification<br>Section C | Approval<br>Chief Eng | A                        |  |  |  |
| DATE | STEP | Section A                        | Initial<br>Chief Eng | Action Description Chief Eng | Sign &<br>Date |                             |                       | Approval<br>QC inspector |  |  |  |
|      |      |                                  |                      |                              |                |                             |                       |                          |  |  |  |
|      |      |                                  |                      |                              |                | ,                           |                       |                          |  |  |  |
|      |      |                                  |                      |                              |                |                             |                       |                          |  |  |  |
|      |      |                                  |                      |                              |                |                             |                       |                          |  |  |  |
|      |      |                                  |                      |                              |                |                             |                       |                          |  |  |  |
|      |      |                                  |                      |                              |                |                             |                       | ·                        |  |  |  |
|      |      |                                  |                      |                              |                |                             |                       |                          |  |  |  |
|      |      |                                  |                      | ·                            |                |                             |                       |                          |  |  |  |
|      |      |                                  |                      |                              |                |                             |                       |                          |  |  |  |

NOTE: Date & initial all entries

| DART AEROSPACE LTD           | Work Order:  | 33694       |
|------------------------------|--------------|-------------|
| Description: Bracket         | Part Number: | D3121-111   |
| Description Diagnot          | ·            |             |
| Inspection Dwg: D3121 Rev: D |              | Page 1 of 1 |

## FIRST ARTICLE INSPECTION CHECKLIST

X First Article Prototype

|                          | 1             | Actual    |          |        |                         |          |
|--------------------------|---------------|-----------|----------|--------|-------------------------|----------|
| Drawing                  | Tolerance     |           | Accept   | Reject | Method of<br>Inspection | Comments |
| Dimension                |               | Dimension |          |        | порессион               |          |
| ~ Ø0.392                 | +0.002/-0.000 | 3928      |          |        |                         |          |
| 0.75                     | +/-0.030      | .750      |          |        |                         |          |
| ~ 0.375                  | +/-0.010      | .375      |          |        |                         |          |
| ~ 2.14                   | +/-0.030      | 2.160     |          |        |                         |          |
| ~ 0.950                  | +/-0.010      | .950      |          |        |                         |          |
| - 0.600                  | +/-0.010      | .(600     |          |        |                         | ·····    |
| 1.96                     | +/-0.030      | 1.967     | ·/       |        |                         |          |
| - 0.280                  | +/-0.010      | -282      |          |        |                         |          |
| <b>3.330</b>             | +/-0.010      | 3.320     | 1        |        |                         |          |
| ~ 3.630                  | +/-0.010      | 3.633     |          |        |                         |          |
| ~ R0.25                  | +/-0.030      | 1.250     |          |        |                         |          |
| `* R0.375                | +/-0.010      | (375)     |          | ., .,  |                         | ·        |
| → Ø0.201                 | +0.005/-0.000 | -202      | <b>ノ</b> |        |                         |          |
| ~ 0.100                  | +/-0.010      | -098      | /        |        |                         | · .      |
| → 6.18                   | +/-0.030      | 6.178     |          |        |                         |          |
| ~ 5.89                   | +/-0.030      | 5.890     |          |        |                         |          |
| - 0.080                  | +/-0.010      | .079      |          |        |                         |          |
| - 0.300                  | +/-0.010      | . 299     |          |        |                         |          |
| ~ 30°                    | +/-0.1°       | 300       |          |        |                         |          |
| ~~ R0.25                 | +/-0.030      | 1-250     |          |        |                         |          |
| - 0.130                  | +/-0.010      | ./29      |          |        | •                       |          |
| 0.381                    | +/-0.010      | .383      |          |        |                         |          |
| 20( <del>20:28</del> T   | +/-0.010      | , 205     |          |        |                         |          |
| 0.400                    | +/-0.010      | -398      |          |        |                         | 1        |
| 0.580                    | +/-0.010      | 584       |          |        |                         |          |
|                          |               |           |          |        |                         |          |
| 100°                     | +/-0.1°       | 100°      | /        |        |                         |          |
| .ივე <del>- 0.32</del> - | +/-0.010      | .031      |          |        |                         |          |

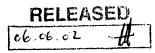
Measured by: Shaper | Audited by: Shaper | Prototype Approval: N/A |
Date: 07/10/31 | Date: N/A

| Rev | Date     | Change  | Revised by | Approved |
|-----|----------|---|------------|----------|
| Α   | 04.01.12 | New Issue P/O D3121-141                         | KJ/RF      |          |
| В   | 04.05.05 | Dimensions changed/re-arranged per Dwg revision | KJ/JLM 1.A |          |
| С   | 06.06.14 | Dwg Rev. updated                                | KJ/JLM 🛠   |          |





| .: | DESIG | N 4         | DRAWN BY   | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA                      |
|----|-------|-------------|------------|---|
|    | CHEC  | (EQ)        | APPROVED A | DRAWING ND. REV. D  |
|    |       | Ms.k.       | -At        | D3121 SHEET 1 OF 10   |
| ·  | DATE  | <del></del> |            | TITLE SCALE   |
|    | 06.0  | )5.17       |            | BRACKET ASSEMBLY 1:2  |
|    | Α     |             | 02.04.15   | NEW ISSUE   |
|    | В     |             | 03.01.16   | ADD RIDGES; ADD MAT'L PROP; FIX P/N<br>ADD -141/-143/-144/-145/-146 |
|    | С     |             | 04.02.17   | ADD CLEARANCE; USE -241 BEARING                                     |
|    | D     |             | 06.05.17   | D3121-25 CAP WAS 1.024, NOW 1.000                                   |

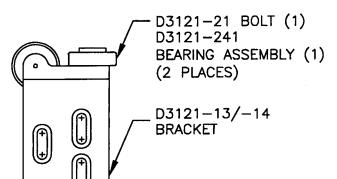


 $\bigoplus$ 

| _ | 03121-21 BOLT (1)<br>03121-241<br>BEARING ASSEMBLY (1 | ) |
|---|---|---|
| _ | D3121-11 BRACKET                                      |   |

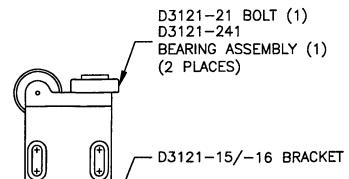
### D3121-041 BRACKET ASSEMBLY

(REPLACES PREMIER P/N B30-23000-33)



# D3121-043 (SHOWN) / D3121-044 (OPPOSITE) BRACKET ASSEMBLY

(REPLACES PREMIER P/N B30-23000-37/-38)



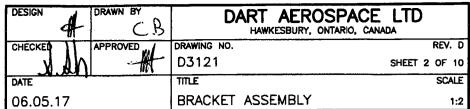
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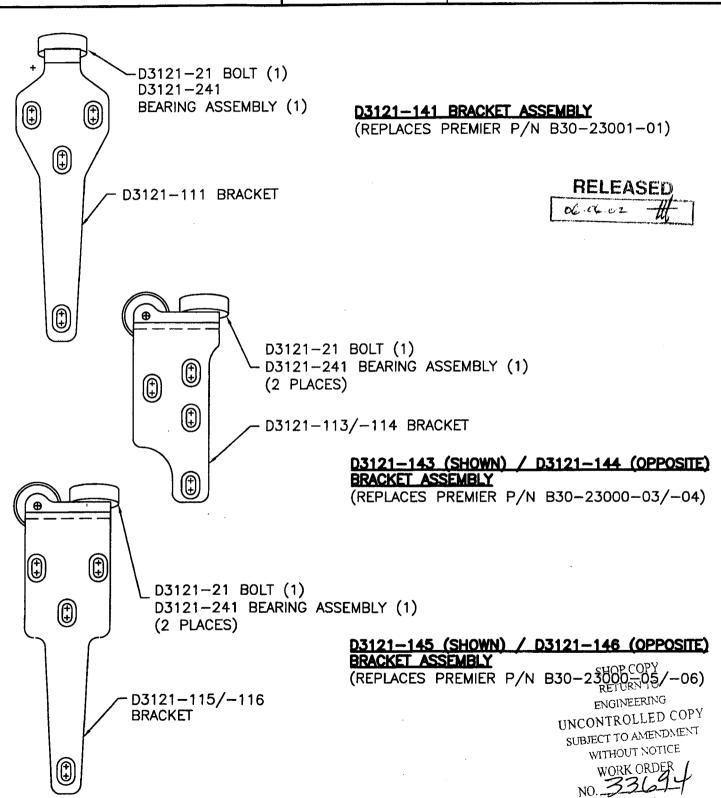
(REPLACES PREMIER P/N B30-230000035/-36)

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WITHOUT NOTICE
WORK ORDER

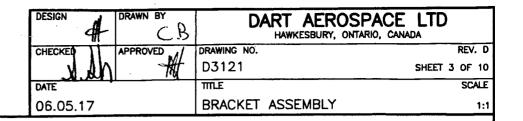
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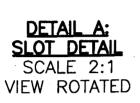


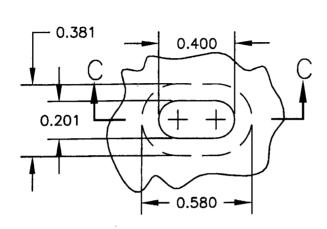


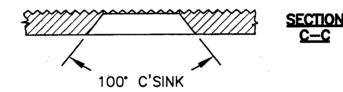




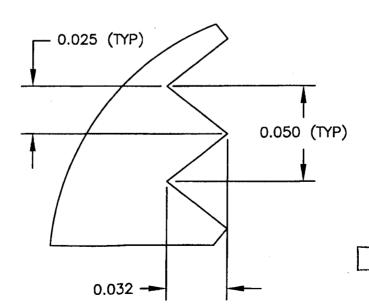








**DETAIL B: RIDGE DETAIL**PARTIAL SECTION
SCALE 1:20

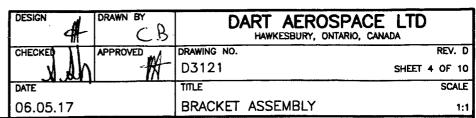


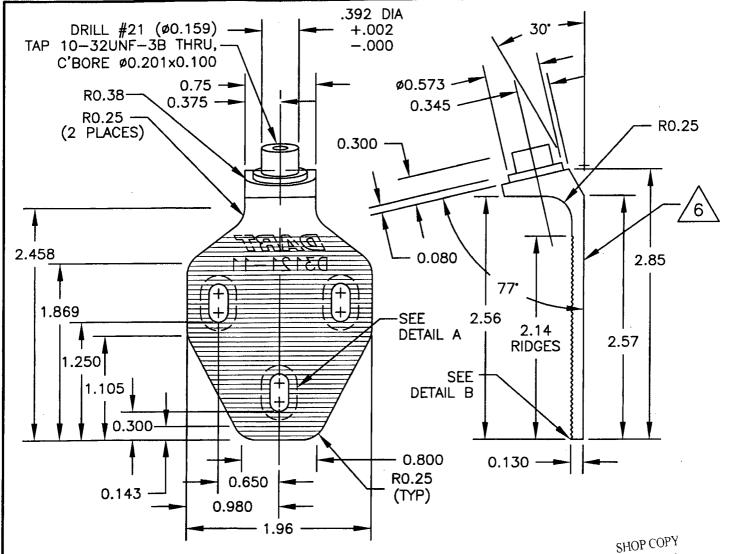
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D3121-11 BRACKET

1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
MIN ULTIMATE TENSILE = 150 ksi

MIN YIELD TENSILE = 100 ksi
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

3) ALL DIMENSIONS ARE IN INCHES

4) BREAK ALL SHARP EDGES 0.005 TO 0.015

5) ENGRAVE DART P/N & LOGO AS SHOWN

6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

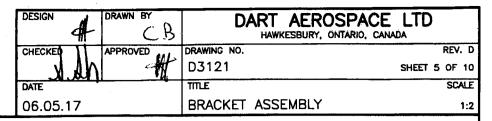
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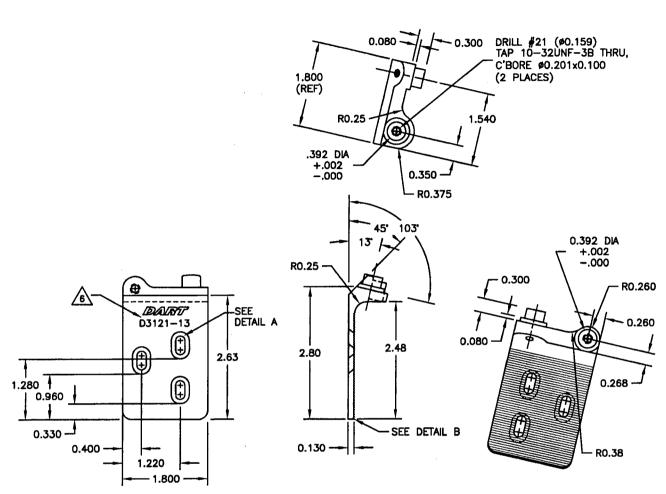
NO. 33

06 de 02 1

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D3121-13 BRACKET (SHOWN) D3121-14 BRACKET (OPPOSITE)

SHOP COPY RETURN TO ENGINEERING UNCONTROLLED COPY

1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B) SUBJECT TO AMENDMENT MIN LII TIMATE TENCILE STRENGTH ASSOCIATION NOTICE MIN ULTIMATE TENSILE STRENGTH = 150 ksi

MIN YIELD TENSILE STRENGTH = 100 ksi

TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

3) ALL DIMENSIONS ARE IN INCHES

4) BREAK ALL SHARP EDGES 0.005 TO 0.015

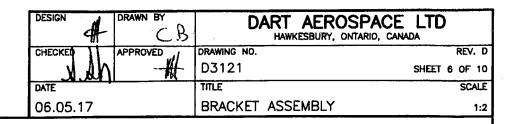
5) ENGRAVE DART P/N & LOGO AS SHOWN 6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005 RELEASED

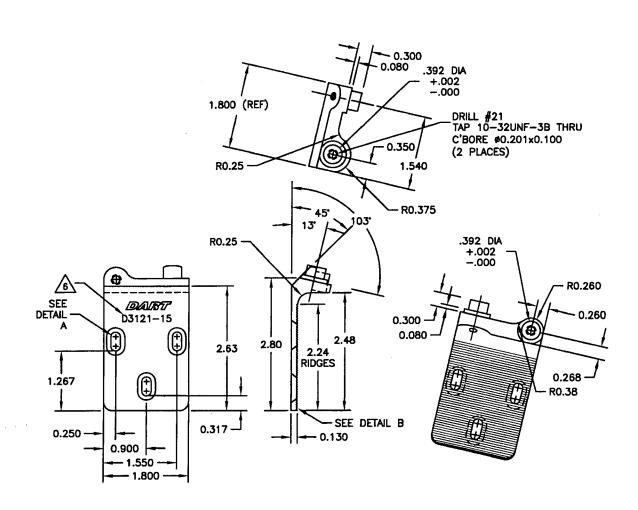
WORK ORDER

06.06.02

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D3121-15 BRACKET (SHOWN)
D3121-16 BRACKET (OPPOSITE)

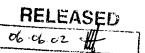
1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
MIN ULTIMATE TENSILE = 150 ksi

2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

MIN YIELD TENSILE = 100 ksi

- 3) ALL DIMENSIONS ARE IN INCHES
- 4) BREAK ALL SHARP EDGES 0.005 TO 0.015
- 5) ENGRAVE DART P/N AND LOGO AS SHOWN
- 6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

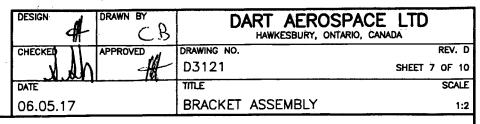
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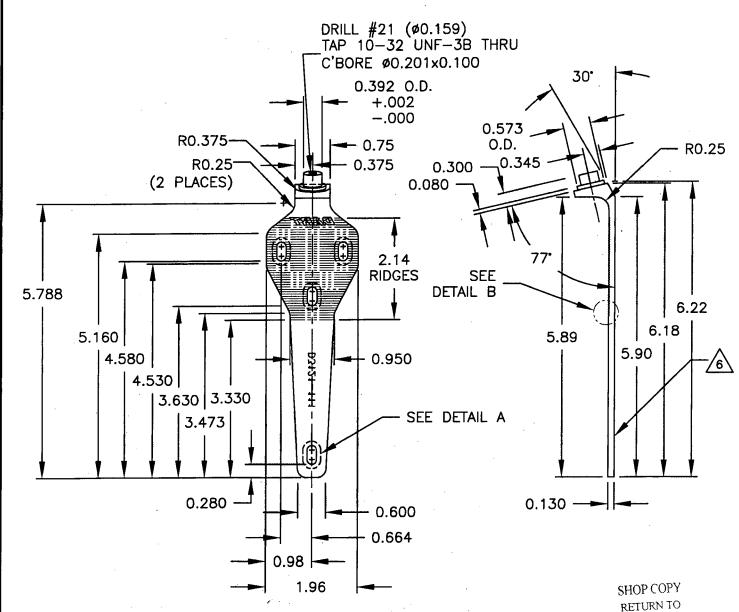


NO. 320

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D3121-111 BRACKET

1) REPLACES PREMIER P/N B32-23001-11

2) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
MIN ULTIMATE TENSILE = 150 ksi

MIN YIELD TENSILE = 100 ksi

3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHEWISE NOTED

4) ALL DIMENSIONS ARE IN INCHES

5) BREAK ALL SHARP EDGES 0.005 TO 0.015

6) ENGRAVE DART P/N & LOGO IN AREAS SHOWN

7) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 33694

**ENGINEERING** 

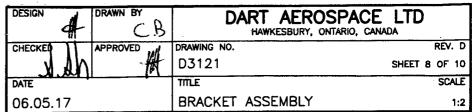
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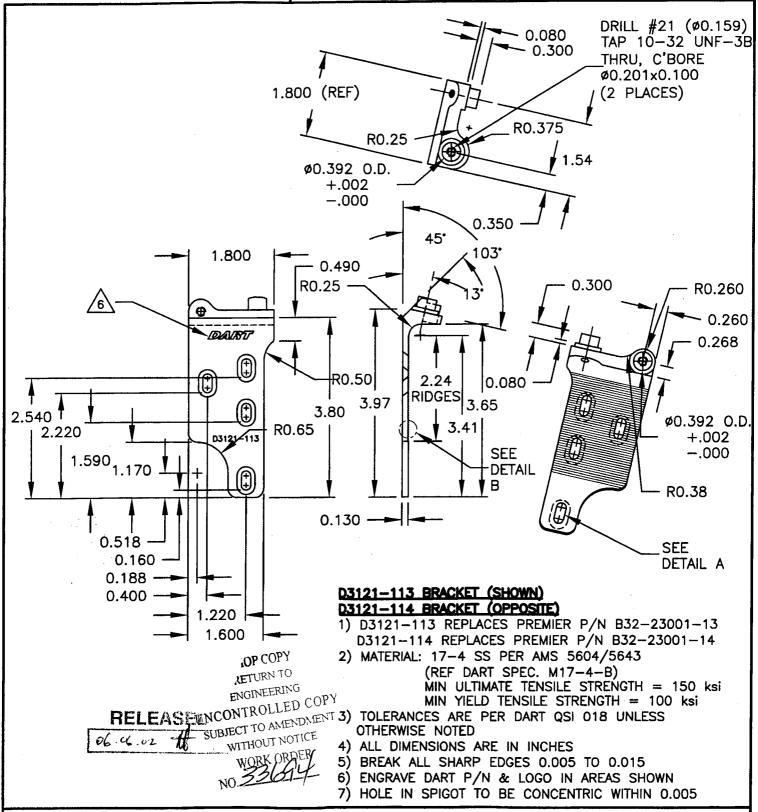
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06.06.02 A

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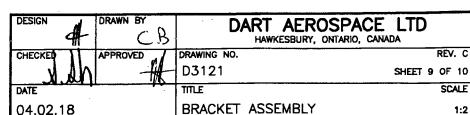


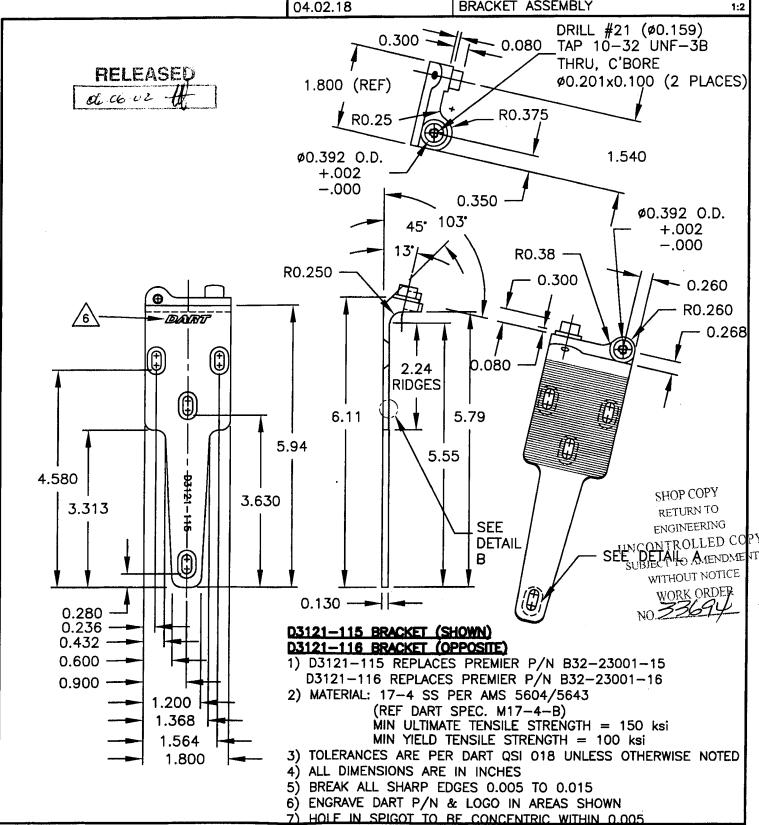




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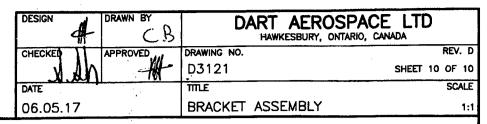


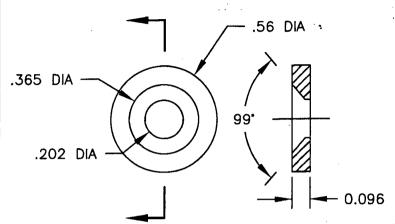




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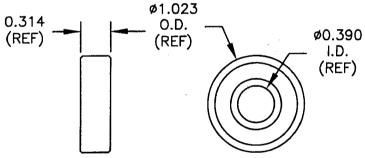






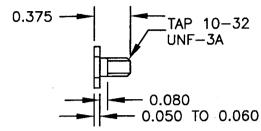
#### D3121-17 WASHER (SCALE 2:1)

- 1) REPLACES PREMIER P/N B32-23001-17
- 2) MATERIAL: AISI 303 SS ROUND BAR, ANNEALED (REF DART SPEC. M303R)
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) BREAK ALL SHARP EDGES 0.005 TO 0.015



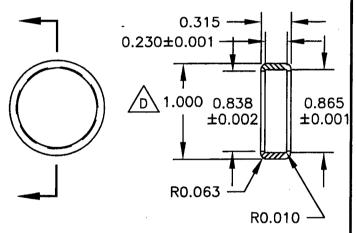
### D3121-19 BEARING (SCALE 1:1)

- 1) POSSIBLE SUPPLIER: KING BEARING P/N 6000-2ZJ/EM 1) MATERIAL: DELRIN ROD, Ø1.25 FAFNIR P/N 9100KDD
- 2) ALL DIMENSIONS ARE IN INCHES



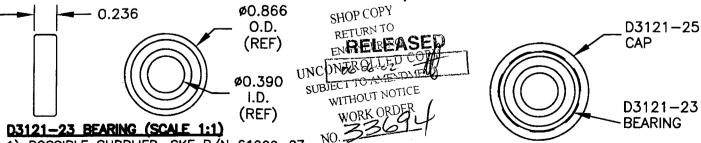
### D3121-21 BOLT (SCALE 1:1)

- 1) MATERIAL: AISI 303 SS HEX, ANNEALED (REF DART SPEC. M303H0.500)
- NONE 2) FINISH:
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) BREAK ALL SHARP EDGES 0.005 TO 0.015



#### D3121-25 CAP (SCALE 1:1)

- - (REF DART SPEC. M-DELRIN-R1.250)
- 2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 3) ALL DIMENSIONS ARE IN INCHES



1) POSSIBLE SUPPLIER: SKF P/N 61900-2Z

OR KML P/N 6900-ZZ

ALL DIMENSIONS ARE IN INCHES

D3121-241 BEARING ASSEBLY (SCALE 1:1)

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